

SJAA EPHEMERIS

Tonight's Top 10 List: Elements in Abundance

Quick, what are the ten most abundant elements in the Galaxy?

Guessing number 1 isn't difficult. We know Hydrogen was created in the Big Bang and it is still everywhere you look. Since Hydrogen is fused into Helium, it is natural to pick Helium as #2. That's correct but probably most of the helium in the Galaxy was formed in the Big Bang. Although Helium is found on earth it was actually first discovered

in the Sun.

After Hydrogen and Helium show up as 1-2 in the Periodic Chart of Elements and also in actual abundance, it is tempting to keep going down the chart. But that would be wrong. Lithium is most likely another Big Bang product but rarely. Knowing that, you would be wise to skip over Beryllium and Boron. Carbon, anyone? Nope. Oxygen is twice as abundant as Carbon. Oxygen and

Carbon, the next most abundant element, are both created by fusing (or "burning") Helium.

At this point, if we are guessing the #5 element on our top 10 list, we might be tempted to look at Neon. Once a star finishes fusing Helium it will start fusing Carbon into Neon. That turns out to be correct. If instead, you were thinking that CHON is the formula for life, Nitrogen must be high on the list. It is, #6 to be exact and nearly as abundant as Neon. Nitrogen is actually created as one of the less likely by-products of Hydrogen fusing.

So, with the six most abundant elements we have everything we need for life, balloons and advertising signs. What's #7. Magnesium, the 12th element in the Periodic Table which is created by Neon and Carbon burning. Next comes Silicon. In the #9 position we find Iron, the heaviest and last element that any sun will create through fusion. Everything heavier than Iron is only created in the supernovae explosion itself. In fact, it is the creation of Iron that triggers the supernova. The number #10 element is Sulphur. Silicon and Sulphur are created during Oxygen burning.

So that's your top 10 list of the most common elements in the Galaxy. Hydrogen and Helium are spread throughout the Galaxy as the result of the Big Bang. The others need a supernovae to populate the Galaxy. Information for this article came from <http://www.talkorigins.org/faqs/supernova/#BM82> which in turn came from Ken Crowell's book "Alchemy of the Heavens" (Doubleday 1996).

SJAA Activities Calendar

Jim Van Nuland

April

- | | |
|--|---|
| 1 Houge Park star party. Sunset 6:31 p.m., 45% moon rise 2:19 a.m. Star party hours: 7:30 p.m. to 10:30 p.m. | 28 ATM Class at Houge Park. 7:30 p.m. |
| 1 Astronomy class at Houge Park. 7:30 p.m. Akkana Peck on the planets. | 29 Astronomy class at Houge Park. 7:30 p.m. |
| 2 Dark sky weekend. Sunset 6:31 p.m., 30% moon rise 4:08 a.m. DST | 29 Houge Park star party. Sunset 7:56 p.m., 60% moon rise 2:07 a.m. Star party hours: 9:00 p.m. to midnight. |
| 3 DST begins. Advance Clock at 2 a.m. to 3 a.m. | 30 Dark sky weekend. Sunset 7:57 p.m., 48% moon rise 2:49 a.m. |
| 9 Dark sky weekend. Sunset 7:38 p.m., 2% moon sets 8:56 p.m. | May |
| 15 Houge Park star party. Sunset 7:43 p.m., 46% moon sets 2:49 a.m. Star party hours: 8:30 p.m. to 11:30 p.m. Astronomy Day. | 7 Dark sky weekend. Sunset 8:03 p.m., 0% moon rise 6:06 a.m. |
| 16 ATM Class at Houge Park. 7:30 p.m. | 13 Houge Park star party. Sunset 8:08 p.m., 30% moon sets 1:21 a.m. Star party hours: 9:00 to midnight |
| 24 Auction XXV – SJAA/Bay Area Astronomical Auction starts at noon. No general meeting in April. | 14 ATM class at Houge Park. 7:30 p.m |
| | 21 General meeting. 8 p.m. |
| | 26 ATM class at Houge Park. 7:30 p.m |
| | 27 Houge Park star party. Sunset 8:19 p.m., 74% moon rise 0:48 a.m. Star party hours: 9:30 to midnight |
| | 28 Dark sky weekend. Sunset 8:20 p.m., 63% moon rise 1:25 a.m. |

24 hour news and information hotline: (408) 559-1221

<http://www.sjaa.net>

Shingletown Star Party

Richard Ozer

The rain is nearly over... in fact the skies have just cleared over Northern California (for a few hours anyhow). That means it's time to start thinking about SUMMER STAR PARTIES!!!

And if it didn't pop into your head right away, it's a particularly good time to start thinking about the SHINGLETOWN STAR PARTY.

This is SSP's 4th year. Located just 17 miles from Mt. Lassen, the Shingletown Star Party is a fun and unique event, drawing hundreds of amateur astronomers from around the western US. The event is held at the Shingletown Airport (don't worry... no airplanes) boasting dark skies and lots of daytime activities as well.

This year's event will be held from Wednesday July 6th through Monday July 11th. Registration is now open! To register or to get more information, visit www.shingletownstarparty.org.

Feel free to download the flyer at <http://www.shingletownstarparty.org/ssp.2005.flyer.pdf>.

Directions to Houg Park

Houg (rhymes with "Yogi") Park is in San Jose, near Campbell and Los Gatos. From Hwy. 17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy. 85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

The Stars of Orion

Paul Kohlmiller

April is the one of the last months for viewing the Orion constellation. In fact, you have probably been looking at it for the last few months (or you would have, weather permitting). So this article points out a few things you might not know about the major stars in Orion.

The closest of the major stars in Orion is Saiph. Don't know Saiph? It's down by the left foot of the hunter. It is 720 light years away. Betelgeuse is about 450 light years distant. If Betelgeuse was located where the Sun is, Earth, Mars and possibly Jupiter would be inside the star. Betelgeuse will eventually explode as a nova or supernova. When will this occur? Some say it could happen tomorrow, others say it will be millions of years. Should you check with your insurance company? Probably not. Betelgeuse is about 400 light years away and a supernova would have to be within 100 light years to be a serious threat. Although we think of Betelgeuse as the left shoulder of Orion, the name means something closer to armpit.

Bellatrix is 240 light years away, close enough that it seems unlikely to have been formed from the same cloud of dust that created most of the Orion stars. Bellatrix is probably the only one of Orion's major stars that won't explode at some point in time. It is found at the right shoulder of Orion. Rigel is actually the brightest star in Orion despite the designation "Beta Orionis". At a SJAA meeting I asked a question about planet formation around large stars using Rigel as an example. The answer is that Rigel is so large and powerful, it blew away the rest of its protoplanetary disk. In fact, Rigel is probably a dying star having exhausted its supply of hydrogen and is

now burning helium into oxygen and carbon.

The stars of Orion's belt are, from left to right, Alnitak, Alnilam and Mintaka. The three stars are similar. They are all blue-white giants that will eventually supernova. They appear to be nearly equal in magnitude so the intrinsically brightest would have to be the one furthest away. That would be Alnilam around 1300 light years distant. Alnitak is 870 light years away and Mintaka is 915 light years distant. All of these stars



Photo of Orion by Matthew Spinelli, a five minute exposure on film through a small scope. Labels by the author.

were formed from the same interstellar cloud that also is the source of the Great Nebula in Orion.

The Great Nebula is also called M42 and M43, magnificent views of a stellar nursery and a star party favorite. At a recent star party a young observer said that it looked like cotton candy. Not a bad description. The nebula is further from earth than the other stars we mentioned, 1500-1800 light years away. The four bright stars in the center, the trapezium, have actually blown out a hole in the nebula that let's us see inside. The trapezium is actually a multiple star system designated as Theta Orionis.

See sources for this article in the HTML version of the Ephemeris.

Sunning

Dave North

There will be no Moon column this month because, due to a unique conjunction of libration effects, precession harmonics, alignment of planets and disjunction of conjunctions, there will be no Moon this month.

Okay, okay, okay.

Really there won't be a column because I kept trying to think of something to do for an April Fool's Column and never really did. As you can see.

There is (as usual) an event of some note that We Won't See — a hybrid solar eclipse. Annular in some parts and total out in the middle of the Pacific, basically.

For those who like extremely astringent thrills, there's April 24's penumbral lunar eclipse in the wee hours of the morning. Few things are less exciting than a penumbral eclipse, but I'll be glad to publish a list of same should folks wish to send their suggestions in. Suffice it to say the Moon will look a bit dim.

Another reason for the abbreviated column (other than a stunning lack of inspiration and/or cleverness) is the good weather we've had preceding and just after March 10. This has led to a spate of Actual Observing, Messier Marathoning (until clouds didn't us part) and Incredibly Long Hikes To See Great Things That Leave Me Exhausted.

So there!

More detail on the April solar eclipse.

The very edge of the eclipse on April 8 will touch San Diego. You can see annular "totality" if you go to Panama. Otherwise, true totality will only be visible over areas that are covered by oceans. For more detail see page 73 in the April issue of S&T.

Jim Van Nuland

It's spring, and time for the annual migration of astronomical paraphernalia from one garage to another!

On Sunday, April 24, 2005, an astronomical auction and swap meet will be conducted at Houge Park in San Jose, sponsored by the San Jose Astronomical Association. The SJAA Auction is a great opportunity for beginners to purchase their first telescope at a great price! Experienced observers often find equipment they need for their next observing project, from OIII filters to finders to star charts. All kinds of interesting items are found in the auction. We will have the auction first, followed by a swap, to allow people some additional haggling time for those items that were optimistically priced by the seller in the auction, or to sell those odds and ends items which were better off being in a swap. It is an odd year, so Jay Freeman will be our auctioneer. Those who have observed his performance in previous auctions have learned to appreciate his skillful evaluation of classical astronomical items on the spot. Great entertainment for all!

Doors open at 12:00 p.m. (or only slightly before) to register material for the auction, and view the auction material. The club reserves the right to accept only appropriate material for the auction so that the auction will run smoothly. The

Sunday April 24 Houge Park Starts at Noon

auction will begin at 1 p.m., and will run as long as needed. Seller may specify a minimum bid, which if not met, will return the item back to the seller with no commission applied. After the auction, buyers and sellers settle up using one check to (or from) SJAA and claim their items. Seller pays 10% commission, with a cap of \$50 for any one item. We do not handle charge cards. There is no fee for bidder cards.

After the auction, material for the swap meet will be allowed into the hall, about 3 p.m. or perhaps earlier. Sellers are encouraged to bring items that would interest the astronomical audience such as astronomical, science, computer, or tech items. The SJAA reserves the right to turn away inappropriate items for the swap. Joe Sunseri of Earth and Sky Adventure Products will be there with many fine new and used items. At the swap, each buyer pays the seller. Sellers are to keep track of their sales, and pay a 10% commission, as for the auction. There are no table fees. All commissions from the auction and the swap are tax-deductible, as SJAA is a 501(c)(3) educational organization.

Do you have a large item such as a telescope? Please email the auction team at auction@sjaa.net with a description of the scope and a picture if possible. We will add it to the auction website for some pre-auction publicity. This allows the bidders to find out how much that APO scope is really worth, so you will be more likely to sell it. Do you have 5 or more items? We suggest pre-registering at the above email address as much as possible to avoid a crush at the registration table. For more about SJAA, visit our web site at <http://www.sjaa.net> or email Jim Van Nuland at the above address. See you there!

Board of Directors Elected

Jim Van Nuland

The February General Meeting is designated the corporation's Annual Meeting, at which the Board of Directors are elected for the coming year. The Board has nine members who serve two-year terms. Four are elected in even years; the other five in odd years.

Re-elected were: Dana Crum, Jim Van Nuland, Bill O'Shaughnessy, Craig & Elena Scull (shared seat). Newly-elected was Gordon Reade. Bob Havner declined re-nomination, and Gordon takes his seat.

Another year to go: Gary Mitchell, Dave Smith, Mike Koop, and Rob Hawley. For the record, Steve Nelson resigned in May 2004; Rob was appointed to the vacancy on August 28, 2004.

We thank Bob and Steve for their many contributions, and welcome Rob and Gordon to the Board.

At the next Board meeting the new Board will elect its officers.

Richard Barrett

Jim Van Nuland

The Mercury-News reports the death of retired M-N columnist Richard Barrett. Among other work in his 49 year career, he wrote a column titled "Share it with Barrett". It was in one of those columns on Nov. 8, 1954, he printed William Weller's suggestion that there ought to be an astronomy club here in San Jose. The first meeting was held on December 6, the beginning of the San Jose Amateur Astronomers, renamed in 1977 the San Jose Astronomical Association.

He was at our 40th anniversary meeting in 1994, but was too frail to come last December for our 50th. May he rest in peace.

Excellent SF Bay Area Graze April 15 of Upsilon Geminorum

Walt Morgan via Tinka Ross

The best grazing occultation for the S.F. Bay Area this year will be the evening of Friday April 15, 2005.

The star, Upsilon Geminorum, at magnitude 4.1 is almost bright enough to qualify this graze as Spectacular. This graze is included in the map on page 80 of the January 2005 Sky and Telescope Occultation Highlights article.

Features. This fine graze is especially suitable for beginners. The 46% sunlit waxing moon will be west at a high elevation (56 degrees), and there will be a large cusp angle (12 degrees on the dark side of the south cusp). It should even be possible to observe this graze with binoculars, and the time of the event, immediately after 9:35 p.m. PDT, near the end of the workweek for most of us, is unusually convenient. The Universal Time (UT) and date are: 0435 hours, April 16.

Location. The graze path of particular interest for this event is a little more than one kilometer wide. A location on the west side of I-880 in south Fremont, near the intersection with Fremont Blvd., has been chosen for an expedition. There are good views to the west, and there should be very little vehicular traffic.

Techniques. I will be video-recording this graze with an audio timing signal from WWV superimposed, a technique that has become very affordable, and one that nearly eliminates timing inaccuracies. Scientifically useful data can also be obtained using the traditional method of recording the observer's voice and a timing signal onto an audiotape. It is also quite acceptable for a person to join the group just to observe — disappearances and reappearances of a bright star on the dark lunar limb are never-forgotten experiences.

Profile. The predicted lunar profile is a single large peak, with a fairly steep slope on the leading edge, and a long ramp on the trailing edge. The steep leading edge means that the first Disappearance for all observers will happen within a span of about 30 seconds. Then, depending on the observer's location, the star will be hidden for one to three minutes. The subsequent Reappearances for the group will be spread over about two minutes, and during that time many observers might see multiple events as the star passes briefly behind small irregularities on the lunar limb.

Alternate locations. The graze path also crosses San Francisco, from the Presidio to the Portrero area. Further south it can be observed near I-5 south of Los Banos, and near Fresno, Bakersfield, Mojave, Victorville and Yuma. Maps and other assistance can be provided for anyone who would like to organize an expedition for any of these locations by contacting me at Apr15UGem@AOL.com, a virus-protected address dedicated to this graze.

More information. Persons wishing to join me in Fremont may obtain details, including a JPEG map of the meeting site and a plot of the predicted profile, by emailing requests to the Apr15UGem@AOL.com address.

New Theory about the Barringer Meteor Crater

Mary Kohlmler

Scientists are in agreement that a rock from space crashed into the ground in Arizona 50,000 years ago, carving out a pit 1,240 meters (4,100 feet) across, creating the Barringer crater. But how fast was this rock going when it hit the ground? Where is all the impact-melted rock? Originally thought to be going 20 km/sec (44,000 mph), the meteor should have fractured into pieces which would have covered a larger area.

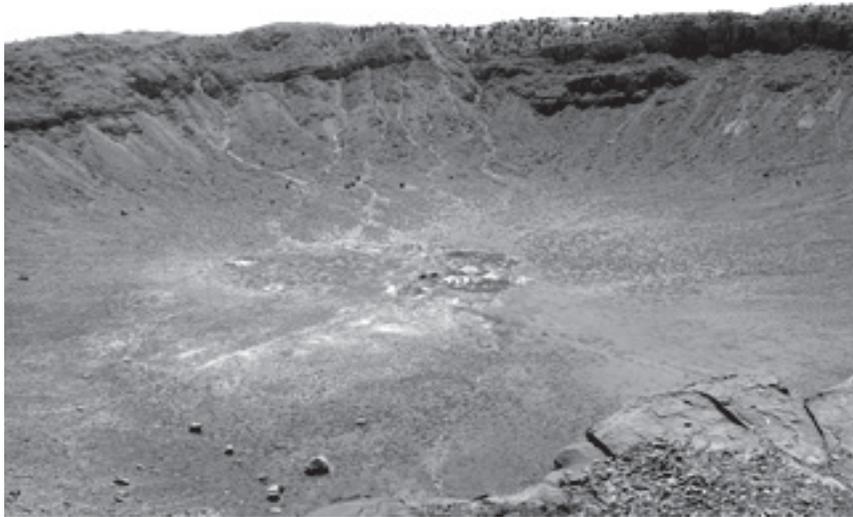
Scientists have now created a new simulation that calculates the meteor was going only half that speed, and probably came down as a swarm of material and not a single rock.

The iron meteorite was traveling much slower than originally thought, according to the University of Arizona Regents' Professor H. Jay Melosh and Gareth Collins of the Imperial College London

Report in Nature (March 10). Melosh and Collins used sophisticated mathematical models in analyzing how the meteorite would have broken up and decelerated as it plummeted down through the atmosphere. About half of the 300,000 ton, 130-foot diameter space rock would have broken up into pieces before ground impact, said

Melosh, and the other would have remained intact and hit at about 12 km/sec (26,800 mph).

That velocity is almost four times faster than NASA's experimental X-43A scramjet (the fastest aircraft flown). However, it was too slow to have melted much of the white Coconino formation in northern Arizona, solving a mystery that has stumped researchers for years.



This is a picture of Barringer Crater taken from the rim of the depression. Photo courtesy of Paul Kohlmler.

Scientists have tried to explain why there is not more melted rock at the crater by theorizing that water in the target rocks vaporized on impact or that carbonates in the target rocks exploded, vaporizing into carbon dioxide. The authors stated, "If the consequences of atmospheric entry are

properly taken into account, there is no melt discrepancy at all." According to Melosh, "Earth's atmosphere is an effective but selective screen that prevents smaller meteoroids from hitting Earth's surface." When a meteorite hits the atmosphere, the pressure is like hitting a wall. "Even though iron is very strong, the meteorite had probably been cracked from collisions in space," Melosh said.

"The weakened pieces began to come apart and shower down from about 8-1/2 miles high. As they came apart, atmospheric drag slowed them down, increasing the forces that crushed them so that they crumbled and slowed more."

At about 3 miles altitude, most of the mass of the meteorite was spread in a pancake shaped debris cloud about 650 feet across. The fragments released a total 6.5 megatons of energy between 9 miles altitude and the surface, Melosh said, most of it

in an airblast near the surface. The intact half of the meteorite exploded with at least 2.5 megatons of energy on impact, or the equivalent of 2.5 tons of TNT.

Original source: <http://uanews.org/cgi-bin/WebObjects/UANews.woa/4/wa/SRStoryDetails?ArticleID=10766>

When Dr. Phil Plait spoke at Foothill College in March, the question arose about the possibility that there were humans living in Arizona at the time that the Barringer Meteor hit the earth. The answer appears to be probably not but it might have been close. The first humans to live in North America are often called Paleo-Indians. There is little doubt that Paleo-Indians were living here 13,000 years ago. There is some evidence that they have lived here as early as 40,000 years ago – a mere 10,000 years after the Barringer impact. Last year a scientist working at the Topper archaeological site in North Carolina claimed to have evidence to push back the appearance of the Paleo-Indians to 50,000 years ago. However, this claim is being greeted with skepticism. Although some flint-like stones can be carbon-dated back to this time period, it is not clear that the stones represent human workmanship. For more details see: <http://www.archaeology.org/online/news/topper.html>

Dr. Frank Drake to talk on April 20, 2005 at 7 p.m.

Andrew Fraknoi

Astronomer Frank Drake will give a non-technical, illustrated talk on: "Estimating the Chances of Life Out There" in the Smithwick Theater, Foothill College. Free and open to the public. Parking on campus costs \$2.

In 1960, Dr. Frank Drake performed the first experiment search for radio signals from possible civilizations around other stars. In 1961, he proposed an intriguing method of estimating the number of intelligent life-forms out there that we might communicate with.

In the intervening years, both of Dr. Drake's ideas have become cornerstones of a full-fledged branch of astronomy,

commonly called SETI — the Search for Extra-Terrestrial Intelligence. And Dr. Drake helped found the SETI Institute, the main organization involved in the search.

In the talk on April 20, Dr. Drake will provide a modern update on estimates for the existence of "E.T." He will draw on new ideas and new observations (including the discovery of surprising planets around other stars), which have helped astronomers refine both the targets where they search for life and the methods they use. No background in science will be required for this talk, which will interest both fans of astronomy and science fiction.

Dr. Drake is the Director of the Center for the Study of Life in the Universe at the SETI Institute. He served as Professor of Astronomy and Dean of Natural Sciences at the University of California, Santa Cruz, and as Director of the Arecibo Observatory (which has the largest radio dish in the world.)

Among his many awards, he was the winner of the prestigious Education Prize of the American Astronomical Society for his many contributions to the public understanding of astronomy. He is the co-author, with Dave Sobel, of "Is Anyone Out There", published by Delacorte Press.

Solar System Stats for April 2005

Adapted from the Observer's Handbook published by The Royal Astronomical Society of Canada which in turn gets this data from the U.S. Naval Observatory's Nautical Almanac Office and Her Majesty's Nautical Almanac Office and contributions by David Lane, St. Mary's University, Halifax NS.

		Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Sun
RA	1	0 ^h 22 ^m	0 ^h 44 ^m	20 ^h 43 ^m	12 ^h 55 ^m	7 ^h 28 ^m	22 ^h 42 ^m	21 ^h 18 ^m	0 ^h 42 ^m
	11	0 ^h 07 ^m	1 ^h 30 ^m	21 ^h 13 ^m	12 ^h 50 ^m	7 ^h 30 ^m	22 ^h 44 ^m	21 ^h 18 ^m	1 ^h 18 ^m
	21	0 ^h 21 ^m	2 ^h 17 ^m	21 ^h 42 ^m	12 ^h 46 ^m	7 ^h 31 ^m	22 ^h 45 ^m	21 ^h 19 ^m	1 ^h 55 ^m
Dec.	1	+5°06'	+3°22'	-19°19'	-4°09'	+22°01'	-9°02'	-15°53'	+4°28'
	11	+0°38'	+8°17'	-17°27'	-3°39'	+22°00'	-8°51'	-15°49'	+8°15'
	21	-0°02'	+12°53'	-15°21'	-3°11'	+21°56'	-8°41'	-15°45'	+11°48'
Dist (AU)	1	0.59	1.72	1.60	4.46	8.86	20.90	30.63	0.999
	11	0.64	1.72	1.53	4.46	9.02	20.80	30.49	1.002
	21	0.76	1.72	1.46	4.50	9.19	20.67	30.33	1.005
Mag	1	5.2	-3.8	0.9	-2.5	0.1	5.9	8.0	
	11	1.8	-3.8	0.8	-2.5	0.1	5.9	7.9	
	21	0.7	-3.8	0.7	-2.4	0.2	5.9	7.9	
Size	1	11.4"	9.7"	5.9"	44.2"	18.7"	3.4"	2.2"	32'01"
	11	10.5"	9.7"	6.1"	44.1"	18.3"	3.4"	2.2"	31'55"
	21	8.8"	9.7"	6.4"	43.8"	18.0"	3.4"	2.2"	31'50"

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Publication Statement

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Submit

Submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to ephemeris@sjaa.net. **Deadline, 10th of previous month.**

SJAA loaner scope status

All scopes are available to any SJAA member; contact Mike Koop by email (koopm@best.com) or by phone at work (408) 473-6315 or home (408) 446-0310 (Please leave message, phone screened).

Available scopes

These are scopes that are available for immediate loan, stored at other SJAA members homes. If you are interested in borrowing one of these scopes, please contact Mike Koop for a scope pick up at any of the listed SJAA events.

# Scope	Description	Stored by
1	4.5" Newt/ P Mount	Annette Reyes
3	4" Quantum S/C	Hsin I. Huang
7	12.5" Dobson	Tom Fredrickson
8	14" Dobson	Jan Lynch
14	8" f/8.5 Dob	Colm McGinley
15	8" Dobson	Scott Pelger
16	Solar Scope	Bob Havner
19	6" Newt/P Mount	Daryn Baker
23	6" Newt/P Mount	Wei Cheng
24	60mm Refractor	Al Kestler
26	11" Dobson	Vivek Kumar
27	13" Dobson	Steve Houlihan
28	13" Dobson	Anupam Dalal
29	C8, Astrophotography	Mark Ziebarth
32	6" f/7 Dobson	Sandy Mohan
34	Dynamax 8" S/C	Yuan-Tung Chin
37	4" Fluorite Refractor	Steve Sergeant
38	Meade 4.5" Digital Newt	Tej Kohli
40	Super C8+	Mike Macedo
41	18" Sky Designs Dob	Len Bradley
42	11x80 Binoculars	Ritesh Vishwakarma

Scope loans

These are scopes that have been recently loaned out. If you are interested in borrowing one of these scopes, you will be placed on the waiting list until the scope becomes available after the due date.

# Scope	Description	Borrower	Due Date
10	Star Spectroscope	Jim Albers	3/18/05
11	Orion XT6 Dob	John Durant	4/12/05
13	Orion XT6 Dob	Ravinder Pal Singh	4/14/05
35	Meade 8" Equatorial	Ethan Romander	6/6/05

Extended scope loans

These are scopes that have had their loan period extended. If you are interested in borrowing one of these scopes, we will contact the current borrower and try to work out a reasonable transfer time for both parties.

# Scope	Description	Borrower	Due Date
2	6" f/9 Dob	John Paul De Silva	?
6	8" Celestron S/C	Karthik Ramamurthy	4/8/05
9	C-11 Compustar	Bill Maney	Indefinite
12	Orion XT8 Dob	Mike Koop	Transit
21	10" Dobson	Michael Dajewski	Repair
33	10" Deep Space Explorer	Ion Coman	4/22/05
36	Celestron 8" f/6 Skyhopper	Saman Behjat	5/28/05
39	17" Dobson	Rob Hawley	2/28/05

Waiting list:

8	14" Dobson	Colm McGinley
33	10" Deep Space Explorer	Zachary Jacobs
37	4" Fluorite Refractor	Bob Leitch

San Jose Astronomical Association Membership Form

New **Renewal** (Name only, plus corrections below)

Membership Type:

- Regular — \$15
 Regular with Sky & Telescope — \$48
 Junior (under 18) — \$6
 Junior with Sky & Telescope — \$39

Subscribing to Sky & Telescope magazine through the SJAA saves you \$10 off the regular rate. (S&T will not accept multi-year subscriptions through the club program. Allow 2 months lead time.)

Bring this form to any SJAA Meeting
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